

**LINEMASTER**

**PRESTEL  
&  
TERMINAL  
SOFTWARE  
ROM**

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# **SOLIDISK LINEMASTER COMMUNICATIONS ROM**

## **General:**

The Linemaster Rom was designed to allow the BBC microcomputer to be able to talk to other computers in a variety of ways. Via a suitable MODEM (MODulator, DEModulator) it possesses the ability to operate at most baud rates and protocols in current use.

Hence the Linemaster can allow the BBC to become a Viewdata terminal or even if desired a Viewdata Host. It also can act as a straight semi-intelligent terminal for text communication via bulletin boards or user to user (U2U) use etc.

## **Starting up Linemaster**

The Linemaster programs may be called up in a variety of ways depending on the operations required of them.

To access the main screen menu mode it is necessary to type in either **\*LMS** or **\*LINEMASTER** (can be abbreviated to **\*LINEM.** — note the fullstop). This will call up the default main screen menu with the default settings shown. Alternatively if only Prestel or another similar viewdata system is required to be accessed then **\*PRESTEL** + the telephone number will do all the necessary setting up of the system and dial the number for you (only if the modem is capable of accepting the dial pulses from Linemaster). If the modem in use is unsuitable for use with the auto dial facility then the number may be dialled by hand and **\*PRESTEL** used to bring up Linemaster into the viewdata terminal mode.

If it is desired to use viewdata host facilities on Linemaster then **\*HOST** will call up the main menu for this portion of the program.

On entering Linemaster a screen menu is displayed with the emulation in terminal mode and a timer output displayed in the top right corner of the screen. In the main menu mode all the parameters that appertain to the emulator in use may be modified if required the other functions being ineffective. The common functions between the Terminal and Prestel emulations are as follows:

- \*** This allows operating system calls to be made from within Linemaster.
- #** This key toggles the emulation between Terminal and Prestel modes, (the current mode is displayed at the top of the menu).

**W** This alters the current word format and is alterable in the Prestel mode as well as the terminal mode.

The available word formats are as follows:

| Word length | Stop bits | Parity |
|-------------|-----------|--------|
| 7 bits      | 2         | even   |
| 7 bits      | 2         | odd    |
| 7 bits      | 1         | even   |
| 7 bits      | 1         | odd    |
| 8 bits      | 2         | none   |
| 8 bits      | 1         | none   |
| 8 bits      | 1         | even   |
| 8 bits      | 1         | odd    |

The current word format is always displayed in the menu.

**R** This key allows the ~~TX~~, or receive, speed to be altered to any one of a variety of speeds once again the current setting is always displayed in the menu.

**T** Having a similar function to the R key above, this key allows the TX, or transmit, speed to be varied. The available speeds are listed below.

|        |            |
|--------|------------|
| (i)    | 75 Baud    |
| (ii)   | 150 Baud   |
| (iii)  | 300 Baud   |
| (iv)   | 1200 Baud  |
| (v)    | 2400 Baud  |
| (vi)   | 4800 Baud  |
| (vii)  | 9600 Baud  |
| (viii) | 19200 Baud |

The term baud is the unit of measurement of the speed of transmission of measurement of the speed of transmission of individual bits and 1 baud corresponds to 1 bit per second.

**D** This key toggles the buffer storage between disc and ram. In the Prestel mode this key also arms the buffer ready for any downloading that may need to be done.

**V** This allows the current contents of the buffer to be viewed in either the Terminal or the Prestel mode. If the contents of the buffer contain non-ascii (unprintable) characters then these are replaced by a fullstop to prevent screen corruption.

**S** This key allows the user to save the current contents of the buffer to the current filing system after first prompting for a filename. The file is then saved under the entered filename.

**Z** Pressing this key will erase then contents of the buffer. It is however not fatal if pushed accidentally as a second press will restore the previous contents.

**C** This is the key that enters the chat or information transfer or communication part of the program. This will allow a two way passage of data between the BBC an a remote computer. In the terminal mode and if in mode 7 a status line and clock will be displayed. These, however, are not displayed in either the prestel mode or in mode 3 in terminal mode.

Pressing the ESCAPE or BREAK keys while in the chat mode will drop the line and revert to the main menu.

**!** This is an auto dial facility and will clear the screen and prompt for a number, which it will dial prior to entering the Chat mode. If calling from a PABX where outside line connection may take a few seconds it is possible to insert a '/' character in order to delay

the portion of the number following the outside line connection. If no carrier is detected in about 30 seconds Linemaster will automatically drop the line and prompt for a retry. A negative answer to this prompt will bring up the main menu once more and conversely an affirmative answer will re-dial the number and go through the sequence again. As with the chat mode pressing either the BREAK or ESCAPE keys will revert to the main menu.

**Important note:** Not all modems will auto dial with the Linemaster system so it is necessary to dial the number by hand and enter the communication phase by using option C (Chat mode).

The keys that are only valid in the Terminal mode are as follows:

**M** This is a screen mode change key and allows either 40 column (mode 7) or 80 column (mode 3) displays. It is worth noting that the status line and clock are only displayed in mode 7.

**A** This key enables the user to convert a incoming carriage return signal to a carriage return plus line feed and will need to be used on some systems when the new lines overwrite the ones just received.

**X** The X key toggles the Xon/Xoff protocol. This protocol tells the computer at the far end to stop sending information if your receive buffer is nearly full. This stops information being lost and 'constipation' of the RS423 buffer in the BBC.

**P** If a hard copy printout is desired then the printer may be enabled from the menu as well as from the chat mode. All characters that would go to the screen will also go to the printer when enabled.

**E** If the remote computer does not 'echo' or return the received data then it is possible to use the local echo facility to see the characters that are being sent. It is worth noting at this point that what is sent may sometimes get corrupted and will not necessarily be what is received at the far end.

**@** this is the filter on/off toggle and will mask out the most significant bit of the data byte received. This will, therefore, allow only characters in the ascii range to be sent to the screen or printer. In the case of seven bit word transmissions this option will have no effect.

**B** This is the buffer toggle option and allows the user to select whether or not to have the incoming data stored to a buffer (either disc or ram). The buffer may later be saved to disc (if ram buffer selected) or it may be reviewed at a later time after returning to the menu mode.

## **Operation of the function keys whilst in the chat mode:**

The function keys have various operations depending on the particular emulation that it is in at the time.

The Terminal Emulator keys are as follows:

**f0** This key will toggle the local echo on or off as per the E key in the main menu.

**f1** This is the buffer toggle key the action being the same as the B key in the main menu.

**f2** The action of this key is the same as that of the A key in the main menu and will toggle the auto line feed on or off.

**f3** This is the printer toggle key to enable the printer to be turned on or off at any time in the chat mode.

**f4** This key allows a prepared file to be sent from the current filing system and will



prompt for the filename of the required file. If pressed accidentally then the ESCAPE key can be used to exit.

f5 This key permits the user to swap between 40 and 80 column screens whilst in the chat mode. It must be noted that the clock and status lines are not available when in 80 column mode

f6 This sends a break level down the line this is sometimes used to initialise the remote computers logon procedure.

f7 This allows the escape character to be sent (ascii value 27) as it is not possible to use the ESCAPE key on the BBC for this purpose.

f8 This key is used to reset the clock to zero in order to time the communications.

f9 This key will turn off the clock if it is not required.

The functions for the Prestel Emulator are as follows:

f0 This allows the current page to be tagged for later retrieval. Up to 16 pages may be tagged in this way.

f1 This allows the tagged pages to be retrieved the most current one first. If no pages have been tagged then this key will have no effect.

f2 This key will clear all the tags at present in the machine and once again has no effect if no pages have been tagged.

f3 This key will reveal any hidden text that may in a displayed frame and will have no effect on the received frame otherwise.

f4 This allows a pre-prepared frame to be sent from disc. A filename will be prompted for and then the required frame will be sent if found. This is useful for a fast update on a viewdata gallery.

f5 This is the telesoftware downloader which will download a program to the current buffer. If however ram is selected and the program is a long one then the Linemaster will automatically select the disc system as the buffer.

f6 this is a sequential search facility that does a lateral search from the last tagged page. If page 200 was the last one tagged then repetitive pressing of this key will result in a search from page 200 upwards. Upon reaching 999 however the next page output will be 000 thus the search is only performed on a single level of frame depth. This is extremely useful for a fast search for a viewdata database but watch out for priced frames.

f7 As in the terminal mode this key sends an escape value which is used in viewdata systems for colour and height information.

f8 This key allows the currently selected page to be re-displayed in case it is received with corruption. In the case of a priced frame the re-display should be performed free of charge.

f9 This key will redisplay the previously selected frames to the level allowed by the database accessed.

As with the terminal mode the cursor keys send the correct viewdata value for positional information and are useful on remote frame editors.

The COPY key is also utilised in the Prestel mode and allows a page to be copied to disc. When this key is pressed a filename is asked for and then the current frame is saved to disc.

Also incorporated in the Linemaster package is a viewdata host program. The menu for this can be called up by entering \*HOST.

This part of the program includes a frame editor and a host system.

The frame editor allows frames to be built up for display and the host system will allow the BBC to become an online Viewdata Host. When the ADFS (Advanced Disc Filing System) is used then a directory named 'FRAMEBASE' is looked for as the base directory for the viewdata frames. In the normal DFS systems the current directory is the one that is used as the root.

It must be stressed that when editing frames the current directory must be the one to which you wish the frame to go. Alternatively it may be renamed at a later stage.

Frames can be either named or numbered although there is a difference between the way that the DFS and ADFS treat the numbers.

On the DFS a page number is the same as its filename whereas in the ADFS the page number holds the route to the page from the base directory . . . i.e. if the page number is 123a then the filename of the page will be '\$.FRAMEBASE.1.2.3a' this structure although seeming strange at first is quite logical and allows a large database to be built up with many hundreds of pages even from a single disc.

The editor is a very powerful Teletext Editor and the instructions are as follows:

## Editor control codes

### Effects of escape codes on keys

|       |                 |      |                       |
|-------|-----------------|------|-----------------------|
| A..   | Alpha red       | Q..  | Graphic red           |
| B..   | Alpha green     | R..  | Graphic green         |
| C..   | Alpha yellow    | S..  | Graphic yellow        |
| D..   | Alpha blue      | T..  | Graphic blue          |
| E..   | Alpha magenta   | U..  | Graphic magenta       |
| F..   | Alpha cyan      | V..  | Graphic cyan          |
| G..   | Alpha white *   | W..  | Graphic white         |
| H..   | Flash           | X..  | Conceal display       |
| I..   | Steady *        | Y..  | Continuous graphics * |
| L..   | Normal height * | Z..  | Separated graphics    |
| M..   | Double height   | `..  | Black background *    |
| ..... |                 | ]..  | New background        |
| ..... |                 | ^..  | Hold graphics         |
| ..... |                 | — .. | Release graphics *    |

The editor will automatically enter graphics mode on the entering of a graphics escape code. i.e. <ESCAPE> S will enter the graphic yellow command to the screen and will enter the graphic editor.

The current graphic is displayed on the bottom status line and is altered by keys Q,W,A,S,Z,X. These keys toggle the corresponding block of the graphic to their position on the keyboard. i.e. Q will toggle the top left hand block and X the bottom right.

When the required graphic is displayed on the status line pressing the return key will enter the graphic at the current cursor position.

The graphics mode is automatically exited on the entering of a non-graphic escape code or alternatively by pressing the TAB key.

The graphic editor may also be entered at any time by pressing the TAB key.

If at any time it is required to strip the screen temporarily of its colour and height information then pressing <CTRL> S will removal all the escape codes from the screen. Any required editing may now be done and the escape codes recalled by

pressing <CTRL> S once more.

When the desired screen is completed pressing the COPY key will automatically take you to the route editor. If at any time during route editing it is required to look at the edited screen then pressing the TAB key will return you to the screen editor.

The route can be any valid base page (i.e. NEWS will select NEWSa) in either alpha or numeric letters. This route corresponds to the ADFS route from FRAMEBASE. It is worth noting that on a nested call that only the filename is displayed on the called page and not its directory. This has the effect that a nested page is not accessible from the direct access but only from a page menu.

When all the routes have been entered pressing COPY will save the page or alternatively ESCAPE will exit and not save the page.

The up and down cursor keys will move the cursor to another route hitting RETURN will enter a current line and DELETE will remove a complete line.

When it is desired to use the Viewdata Host system select the base directory by means of a \*DIR command and select the host system from the HOST sub menu. As long as the BBC is connected to a suitable auto answer modem the system will operate as a ordinary Viewdata Host with other modem users now being able to browse through your pages.

#### **IMPORTANT NOTE:**

The first page to be searched for on being called up is the HALLOa page which must be in the base directory. The page called on entering \*90 will be the page called BYEa also in the base directory.

All pages called up on the selection of a number have the 'a' suffix and further pages in the sequence will be suffixed b,c,d,e etc. The best way to learn about the numbering system is to browse around other viewdata systems (Prestel, Local authorities, ITEC's etc) until you are familiar with their operation. It is then only a matter of emulating these systems to get a functional and interesting system up and running.

| PRESTEL  | 10             | 11               | 12               | 13                | 14            | 15             | 16                            | 17             | 18             | 19              | COPY             | LINEMASTER (LMS)<br>SOLIDISK TECHNOLOGY |
|----------|----------------|------------------|------------------|-------------------|---------------|----------------|-------------------------------|----------------|----------------|-----------------|------------------|-----------------------------------------|
|          | TAG<br>PAGE    | RECOVER<br>PAGE  | CLEAR<br>TAGS    | REVEAL<br>TEXT    | SEND<br>FRAME | DOWN<br>LOAD   | NEXT PAGE<br>FROM<br>LAST TAG | SEND<br>ESCAPE | REPEAT<br>PAGE | LAST<br>PAGE    | SAVE<br>SCREEN   |                                         |
| TERMINAL | ECHO<br>ON/OFF | BUFFER<br>ON/OFF | AUTO<br>LINEFEED | PRINTER<br>ON/OFF | SEND<br>FILE  | MODE<br>CHANGE | SEND<br>BREAK                 | SEND<br>ESCAPE | RESET<br>CLOCK | CLOCK<br>ON/OFF | STATUS<br>ON/OFF |                                         |